

# **IOWA DEPARTMENT OF NATURAL RESOURCES**

## **Flood Plain Management Procedural Guide for Buildings and Houses**

### **General**

This procedural guide has been developed to assist you in making an application for a flood plain permit from the Iowa Department of Natural Resources and to help you understand the permitting process. This guide outlines when a flood plain permit is required for a building or house, lists the criteria that need to be met to gain approval, and notes special conditions that may be imposed upon the permittee. Much of the information in this guide was taken directly from, and can be found in, the Iowa Administrative Code, agency number 567, chapters 70, 71, 72 and 75.

Construction of buildings and houses is regulated to assure that structures built on a flood plain are elevated or otherwise protected from floods which could reasonably be expected to occur. In most circumstances the 100-year flood is utilized as the regulatory flood. A 100-year flood is the flood that has a 1% chance of being equaled or exceeded in any one year.

### **When a Permit is Required (Reference: 567 IAC 71)**

Approval by the department for construction, use and maintenance of "buildings" as defined in 567—Chapter 70 and for placement of fill is required as described in the following thresholds.

1. *Building and placement of associated fill in urban areas (incorporated municipalities).* In urban areas approval is required for construction, use and maintenance of buildings in the floodway or flood plain of any stream draining more than 2 square miles at the location of the structure as follows:
  - a. *New construction including fill for development purposes.* Approval is required for construction of any new building. New construction includes replacement or relocation of an existing building. New construction also includes placement and grading of fill materials in a manner that would create an elevated building site.
  - b. *Additions to existing buildings.* Approval is required for any addition which increases the original floor area of a building by 25 percent or more. All additions constructed after July 4, 1965, shall be added to any proposed addition in determining whether the total increase in original floor space would exceed 25 percent.
  - c. *Lowering or elevating.* Approval is required for lowering a floor of a building. Approval is not required for elevating an existing building. However, when a building is elevated the lowest floor should be elevated to the appropriate minimum protection level stated in 567—subrule 72.5(1). The department, upon request, will cooperate in determining the minimum protection level for a person who proposes to elevate a building.
  - d. *Reconstruction.* Approval is required for reconstruction of any portion of a building if the cost of reconstruction exceeds 50 percent of the market value of the existing building or if reconstruction will increase the market value by more than 50 percent.
2. *Buildings and associated fill located within 2 miles of an urban area.* The thresholds for buildings and associated fill in subrule 71.7(1) shall apply to rural areas within 2 miles of municipal corporate limits.

3. *Buildings and associated fill in all other rural areas.* In rural areas not covered by 71.7(1) the thresholds for approval of buildings and associated fill are the same as in 71.7(1) except that approval is required only when the drainage area at the location of the structure is more than 10 square miles.
4. *Buildings and associated fill adjacent to or downstream from impoundments.* Approval is required for new construction, additions, lowering, or reconstruction and associated fill as described in 71.7(1) without regard to the drainage area if the proximity of the building to a dam regulated by the department is as follows:
  - a. *Adjacent to impoundment.* Approval is required for a building and associated fill adjacent to an impoundment if the lowest floor level including any basement is lower than the top of the dam.
  - b. *Downstream from dam.* Approval is required for a building and associated fill downstream from a dam at any location where flooding can be reasonably anticipated from principal or emergency spillway discharges. If the dam does not substantially comply with high hazard criteria in these rules, approval is required for a building and associated fill at any location where flooding can be reasonably anticipated from overtopping and failure of the dam.

### **Criteria for Approval (Reference: 567 IAC 72)**

The following is a list of criteria which apply to buildings and houses. Specific criteria that a project must meet are dependent on the type and nature of the project that is being proposed. The damage potential of a building will dictate the level of protection required. Damage potential essentially relates to risks associated to the building and its contents from exposure to floodwaters as well as to public safety.

1. *Minimum protection levels.* The minimum protection level (MPL) is the level to which the lowest floor of a house or building, including basement, must be protected. This minimum level of flood protection for a building depends on the damage potential of the building and contents. "Maximum," "high," "moderate" and "low" damage potential classifications are defined below. Criteria for determining minimum levels of protection are as follows:
  - a. *"Maximum damage potential"* means the flood damage potential associated with hospitals and like institutions; buildings or building complexes containing documents, data, or instruments of great public value; buildings or building complexes containing materials dangerous to the public or fuel storage facilities, including ethanol plants and biodiesel plants; power installations needed in emergency or buildings or building complexes similar in nature or use to those listed above.

Buildings with maximum damage potential shall be protected to the level of a flood equivalent to Q500 plus 1 foot. Determination of the elevation of the department regional flood is recommended as an alternative to establish an appropriate level of protection for a building which has maximum damage potential (see discussion of flood frequencies and magnitudes in 567—subrule 75.2(1).)
  - b. *"High damage potential"* means the flood damage potential associated with habitable residential buildings or industrial, commercial, or public buildings or building complexes of which flooding would result in high public damages as determined by the department.

Buildings with high damage potential shall be protected to the level of a flood equivalent to Q100 plus 1 foot. Most houses and other buildings, as well as confinement feeding operation structures, will fall under this category.
  - c. *"Moderate damage potential"* means flood damage potential associated with industrial and commercial buildings or building complexes containing readily movable goods, equipment, or

vehicles and seasonal residential buildings or building complexes which flooding would not result in high public damages as determined by the department.

Buildings with moderate damage potential shall be protected to the level of a flood equivalent to Q50.

- d. *"Low damage potential"* means all buildings, building complexes or flood plain use not defined as maximum, high, or moderate damage potential. Residential detached garages and sheds used only for storage are typically considered to be in this category.

Buildings with low damage potential are not required to be elevated. However, there may be elevation requirements for electrical or other services in the structure.

- e. Buildings adjacent to an impoundment shall be protected to the elevation of the top of the dam unless the dam has adequate spillway capacity to discharge the flood corresponding to the damage potential of the building at an elevation below the top of the dam.
- f. Buildings downstream from a dam shall be protected to a level established by the department after due consideration of the hazards posed by the dam for buildings downstream.

2. *Flood protection methods.* The following flood protection methods are required for buildings to which a minimum flood protection level applies. (See also "Flood Protection Method Checklist: Buildings and Houses" in the document titled "Gaining Approval for Flood Plain Development - Buildings and Houses").

- a. *Building Elevated on Fill with a slab on grade type construction.* The structure is built on compacted earth fill so that the lowest floor elevation is at or above the minimum protection level.
- b. *Building elevated on stilts (piers, pilings, etc.).* \*\* The area below a building that is elevated on stilts should remain open and subject to flooding.
- c. *Building with a Basement.* A basement is defined as any fully enclosed area that has its lowest floor below adjacent grades on all sides. A basement must satisfy the following criteria:
- Basement walls and floors below the applicable minimum protection level (MPL) shall be structurally designed and constructed to be watertight to the MPL with walls and floors that are substantially impermeable to the passage of water.
  - All structural components must be able to withstand debris impact forces, and hydrostatic and hydrodynamic forces, including the effects of buoyancy, associated with a water table elevation equivalent to the minimum protection level.
  - All utilities located below the MPL (such as sanitary sewer drains) shall be equipped with automatic closure valves to prevent backflow.
  - A basement must have structural design plans that are certified by a professional engineer licensed in the State of Iowa that the basement design meets the above listed criteria.

Please note that many communities prohibit construction of basements in the flood plain. You should check with your local building or zoning official prior to having a structural design completed for your basement.

- d. *Building that is elevated on an enclosed area below the lowest floor (Minimum Protection Level) but is not a basement as defined above.* \*\* The lower enclosed area must satisfy all of the criteria listed below:

- The enclosed area must be designed to equalize hydrostatic pressure during floods by providing a minimum of two openings having a total net area of not less than one square inch for every square foot of enclosed area subject to flooding. The openings may be equipped with screens, louvers, valves, or other coverings or devices provided they permit the automatic entry and exit of floodwaters. Windows and doors are not considered acceptable openings under this requirement because they require manual operation.
- The bottom of all openings shall be no higher than one foot above the adjacent grade.
- The enclosed area must remain unfinished (not carpeted, drywalled, etc.) and used solely for low damage potential uses such as building access, parking or storage.
- Machinery and service facilities (e.g., hot water heater, furnace, electrical service) contained in the enclosed area must be situated at least one (1) foot above the 100-year flood level.

\*\* Please note that the department does not undertake a review of the structural aspects of the stilts, piers, pilings or other extended footing plans. The applicant should have the structural stability of such a plan reviewed by a structural engineer or other qualified individual.

3. Location. The criteria for location of a building include consideration of the potential for obstructing flood flows and the potential hazards which may arise when the building is surrounded by floodwater. Criteria for location of buildings in floodways and flood plains are as follows:
  - a. *Obstruction.* Buildings shall not be located in the floodway of a stream so as to result, individually or collectively, in any increase in the elevation of the 100-year flood as confined to the floodway. The floodway boundary applicable to an individual application shall be determined as necessary by the department in accordance with the criteria in rule 567—75.4(455B). Analysis of the effect that a building in the floodway would have on flood levels shall be based on the assumption that all similarly situated landowners would be allowed an equal degree of development in the floodway.
  - b. *Public damages.* Buildings shall be located to minimize public damages associated with isolation due to flooding of surrounding ground. In identifying the potential for public damages, the department shall determine whether there is a need for access passable by wheeled vehicles during the 100-year flood. The need for such access shall be determined on the basis of the criteria for evaluating flood warning and response time in 567—subrule 75.2(3).
  - c. *Existing buildings—replacement and improvements.* In applying the criteria in paragraphs "a" and "b" of this subrule to projects which improve or replace existing lawful buildings the department shall give consideration to the policies for protection of existing development in rule 567—75.6(455B).